

1. A and B can do a piece of work in 18 days; Band C can do it in 24 days A and C can do it in 36 days. In how many days will A, B and C finish, it together and separately? (BB AD 2017)

**Solution:**

In 1 day (A + B) work = (1/18) part of the work

In 1 day (B + C) work = (1/24) part of the work

In 1 day (A + C) work = (1/36) part of the work

By adding, we get:

In 1 day, 2 (A + B + C) work = (1/18 + 1/24 + 1/36) = 9/72 = 1/8 part

∴ In 1 day (A + B + C) work = 1/16 part of the work

So, A, B and C together can finish the work in 16 days.

In 1 day A work = (A + B + C) - (B + C) = (1/16 - 1/24) = 1/48 part

∴ A alone can finish the work in 48 days.

In 1 day B work = (A + B + C) - (A + C) = (1/16 - 1/36) = 5/144 part

∴ B alone can finish the work in 144/5 days

In 1 day C work = (A + B + C) - (A + B) = (1/16 - 1/18) = 1/144 part

∴ C alone can finish the work in 144 days.

Ans: 16 days and 48 days, 144/5 days, 144 days.

**Alternative Method:**

A and B can do a piece of work in 18 days,

$$18/A + 18/B = 1$$

$$\text{Or, } 18(1/A + 1/B) = 1$$

$$\therefore 1/A + 1/B = 1/18 \dots (i)$$

B and C can do it in 24 days

$$24/B + 24/C = 1$$

$$\therefore 1/B + 1/C = 1/24 \dots (ii)$$

C and A can do the same work in 36 days.

$$36/C + 36/A = 1$$

$$\therefore 1/C + 1/A = 1/36 \dots (iii)$$

$$(i) + (ii) + (iii) \Rightarrow$$

$$2(1/A + 1/B + 1/C) = 1/18 + 1/24 + 1/36$$

$$\text{Or, } 2(1/A + 1/B + 1/C) = \frac{(4+3+2)}{72}$$

$$\text{Or, } 2(1/A + 1/B + 1/C) = 9/72$$

$$\therefore (1/A + 1/B + 1/C) = 1/16 \dots (iv)$$

So, A, B and C together can finish the work in 16 days.

$$\text{Now, } (iv) - (ii) \Rightarrow$$

$$(1/A + 1/B + 1/C) - (1/B + 1/C) = 1/16 - 1/24$$

$$\text{Or, } 1/A = (3-2)/48$$

$$\therefore 1/A = 1/48$$

∴ A alone can finish the work in 48 days.

$$(iv) - (iii) \Rightarrow$$

$$(1/A + 1/B + 1/C) - (1/C + 1/A) = 1/16 - 1/36$$

$$\therefore 1/B = 5/144$$

∴ B alone can finish the work in 144/5 days

$$(iv) - (i) \Rightarrow$$

$$(1/A + 1/B + 1/C) - (1/A + 1/B) = 1/16 - 1/18$$

$$\therefore 1/C = 1/144$$

∴ C alone can finish the work in 144 days.

Ans: 16 days and 48 days, 144/5 days, 144 days.

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**2. A man sells articles at a profit of 25%. If had bought it at 20% less and sold it for Tk. 10.50 less, he would have gained 30%. Find the cost price of the article? (BB AD 2017)**

**Solution:**

Let, cost price = Tk.  $x$ .

At 25% profit, selling price = Tk.  $(x+x \times 25\%) = \text{Tk. } 1.25x$

When cost price 20% reduced,

New cost =  $(x-x \times 20\%) = \text{Tk. } 0.80x$ ,

$\therefore$  New selling price =  $(0.80x + 0.80x \times 30\%) = \text{Tk. } 1.04x$

According to the question,

$$1.25x - 1.04x = 10.50$$

$$\text{Or, } 0.21x = 10.50$$

$$\text{Or, } x = 10.50 / 0.21$$

$$\therefore x = 50$$

$\therefore$  Cost price Tk. 50 (Ans.)

**Alternative Method:**

Let, cost price be Tk.  $100x$

At 25% profit, selling price =  $(100x + 100x \times 25\%) = \text{Tk. } 125x$

When cost price 20% reduced,

New cost = Tk.  $(100x - 100x \times 20\%) = \text{Tk. } 80x$ ,

$\therefore$  New selling price = Tk.  $(80x + 80x \times 30\%) = \text{Tk. } 104x$

According to the question,

$$125x - 104x = 10.50$$

$$\text{Or, } 21x = 10.50$$

$$\text{Or, } 100x = 10.50 / 0.21$$

$$\therefore 100x = 50$$

$\therefore$  Cost price Tk. 50 (Ans.)

**3. Shakil started a business investing Tk. 25000 in 2009. In 2010, he invested an additional amount of Tk. 10000 and Raihan joined him with an amount of Tk. 35000. In 2011, Shakil invested another additional amount of Tk. 10000 and Jafor joined them with an amount of Tk. 35000. What will be Raihan's share in profit of Tk. 150000 earned at the end of 3 years from the start of the business in 2009? (BB Cash 2017)**

**Solution:**

In 3 years,

Equivalent amount of Shakil = Tk.  $(25,000 \times 3 + 10,000 \times 2 + 10,000 \times 1) = \text{Tk. } 105,000$

Equivalent amount of Raihan = Tk.  $(35,000 \times 2) = \text{Tk. } 70,000$

Equivalent amount of Jafor = Tk.  $(35,000 \times 1) = \text{Tk. } 35,000$

Investment ratio,

$$\therefore \text{Shakil : Raihan : Jafor} = 105,000 : 70,000 : 35,000 = 105:70:35 = 3:2:1$$

Sum of the ratios =  $3+2+1 = 6$

$$\therefore \text{Raihan's profit share} = \text{Tk. } (150,000 \times \frac{2}{6}) = \text{Tk. } 50,000 \text{ (Ans.)}$$

**4. If 9 engines consume 24 metric tonnes of coal, when each is working 8 hours a day, how much coal will be required for 8 engines, each running 13 hours a day, it being given that 3 engines of former type consume as much as 4 engines of latter type? (BB Cash 2017)**

**Solution:**

Here,

3 engines of former type = 4 engines of latter type

1 engine of former type =  $\frac{4}{3}$  engines of latter type

9 engines of former type =  $\frac{4 \times 9}{3} = 12$  engines of latter type

Now,

In 8 hours 12 engines consume 24 metric tonnes

In 1 hours 12 engines consume  $\frac{24}{8}$  metric tonnes

In 1 hours 1 engines consume  $\frac{24}{8 \times 12}$  metric tonnes

In 13 hours 8 engines consume  $\frac{24 \times 13 \times 8}{8 \times 12}$  metric tonnes  
= 26 metric tonnes

Ans: 26 metric tonnes

5. David invested certain amount in three different schemes A, B and C with the rate of interest 10% p.a., 12% p.a. and 15% p.a. respectively. If the total interest accrued in one year was Tk. 3200 and the amount invested in Scheme C was 150% of the amount invested in Scheme A and 240% of the amount invested in Scheme B, what was the amount invested in Scheme B? (BB Cash 2017)

**Solution:**

Let, investment in Scheme A= Tk. 100x

Given that,

Investment in Scheme C= 150% of A=1.5× Tk. 100x= Tk. 150x

And, investment in Scheme C was 240% of B

So, 150x= 240% of B

Or, 2.4B= 150x

Or, B= 150x/2.4

∴ B= 62.5x

We know, Interest= Principal ×Time ×Rate of interest

According to the question,

$100x \times 1 \times 10\% + 62.5x \times 1 \times 12\% + 150x \times 1 \times 15\% = 3200$  [Time= 1 year]

Or,  $\frac{100x \times 10}{100} + \frac{62.5x \times 12}{100} + \frac{150x \times 15}{100} = 3200$

Or,  $1000x + 750x + 2250x = 320000$  [Both side multiply by 100]

Or,  $4000x = 320000$

Or,  $x = 320000/4000 = 80$

Or,  $62.5x = 80 \times 62.5$

∴  $62.5x = 5000$

∴ The amount invested in Scheme B was Tk. 5000. (Ans.)

6. The price of a balcony seat in a theater is 1/3 of the price of a seat in the orchestra. When the theater is completely sold out, the total receipts from the 600 orchestra seats and the 450 balcony seats are Tk. 4500. What is the price of one orchestra seat? (Janata Bank EO (Civil)-17)

**Solution:**

Let, price of one orchestra seat be Tk. 3x and balcony seat be Tk. ( $\frac{1}{3}$  of 3x)= Tk. x

According to the question,

$600 \times 3x + 450 \times x = 4500$

Or,  $1800x + 450x = 4500$

Or,  $2250x = 4500$

∴  $x = 2$

∴ Price of one orchestra seat=  $3 \times 2 =$  Tk. 6. (Ans.)

**Alternative Method:**

Let, price of one orchestra seat be Tk. x and balcony seat be Tk. ( $\frac{1}{3}$  of x)= Tk. x/3

According to the question,

$600 \times x + 450 \times \frac{x}{3} = 4500$

Or,  $600x + 150x = 4500$

Or,  $750x = 4500$

∴  $x = 6$

∴ Price of one orchestra seat= Tk. 6. (Ans.)

7. A lamp is manufactured to sell for Tk. 35.00, which yields a profit of 25% of cost. If the profit is to be reduced to 15% of cost, what will be the retail price of the lamp? (Janata Bank EO (Electrical)-17)

**Solution:**

Given that, selling price= Tk. 35

At 25% profit, cost price= Tk.  $(\frac{35 \times 100}{125}) =$  Tk. 28

At 15% profit, selling price= 115% of Tk. 28= Tk. 32.2

∴ New retailer price will be Tk. 32.2. (Ans.)

8. It takes 120 MT water to sink a ship. Through a hole in the hull of the ship, water is entering the ship at a rate of 2 MT per minute. At the same time, water is being pumped out at the rate 1.5 MT per minute using one pump. After 1 hour and 20 minutes another pump of same capacity was started. How much more time will it take to pump all the water out of the ship? (Bangladesh Gas Field Asst. Manager general/security-17)

**Solution:**

Given that, water enters 2MT per minutes and water pumped out 1.5 MT per minutes.

Per minute water remains in tank =  $(2-1.5) \text{ MT} = 0.5 \text{ MT}$

So, in 1 hour and 20 min (80 min) water remains in tank =  $80 \times 0.5 = 40 \text{ MT}$

After 80 minutes, water pumped out  $(1.5+1.5) \text{ MT} = 3 \text{ MT}$  per minutes.

Per minutes amount of extra water pumped out =  $(3-2) \text{ MT} = 1 \text{ MT}$

1 MT water pumped out in 1 minute

40 MT water pumped out in =  $1 \times 40 = 40$  minutes.

Ans: 40 minutes.

৯. সজল ৬% ও ৭% হারে সরল সুদে দুইটি ভিন্ন অংশে বিনিয়োগ করে ২ বছর পরে মোট ৩৫৪টাকা সুদ পায়। যদি বিনিয়োগের ১ম অংশের এক-চতুর্থাংশ ২য় অংশের এক-পঞ্চমাংশের সমান হয় তবে দুই অংশের বিনিয়োগের যোগফল কত? (Mr. Shajol invested his capital in two parts, one at 6% & another at 7%. At the end of 2 years he received Tk. 354 as interest at all. If one-fourth of 1st part of investment equals to one-fifth of 2nd part of investment, then what was his total investment?) (Bangladesh Gas Field Assistant officer-accounts/finance 2017)

**Solution:**

Let, first part of the investment be Tk. x and second part be Tk. y.

According to the question,

$$\frac{1}{4} \text{ of } x = \frac{1}{5} \text{ of } y$$

$$\text{Or, } \frac{x}{4} = \frac{y}{5}$$

$$\text{Or, } 4y = 5x$$

$$\therefore y = \frac{5x}{4}$$

Now,

$$P_1 n_1 r_1 + P_2 n_2 r_2 = \text{Total interest}$$

$$\text{Or, } x \times 2 \times 6\% + y \times 2 \times 7\% = 354$$

$$\text{Or, } \frac{12x}{100} + \frac{14y}{100} = 354$$

$$\text{Or, } 12x + 14y = 354 \times 100 \text{ [Both side multiply by 100]}$$

$$\text{Or, } 12x + 14 \times \frac{5x}{4} = 35400$$

$$\text{Or, } \frac{48x + 70x}{4} = 35400$$

$$\text{Or, } \frac{118x}{4} = 35400$$

$$\text{Or, } x = 35400 \times \frac{4}{118}$$

$$\therefore x = 1200$$

$$\therefore y = \frac{5 \times 1200}{4} = 1500$$

$\therefore$  First part of the investment was Tk. 1200 and second part was Tk. 1500.

$\therefore$  Total investment = Tk.  $(1200+1500) = \text{Tk. } 2700$  (Ans.)

10. The length of a rectangular field is  $1\frac{1}{2}$  times as large as its width. An amount of Tk. 10260 was needed to cover the field with grass at 1.9Tk per sq. meter. How much would it cost to fence the four sides of the rectangular field at the rate of Tk. 2.5 per meter? (ONE Bank Special Cadre Officer 17)

**Solution:**

Let, the width of the rectangular field be x meters and length =  $1\frac{1}{2} x \text{ m} = 1.5x$  meters.

$$\text{Total area} = 1.5x \times x = 1.5x^2$$

$$\text{So, total cost} = 1.9 \times 1.5x^2$$

According to the question,

$$1.9 \times 1.5x^2 = 10260$$

$$\text{Or, } 2.85x^2 = 10260$$

$$\text{Or, } x^2 = 3600$$

- ∴ Width = 60m and length =  $1.5 \times 60 = 90$ m  
 ∴ Perimeter =  $2(90 + 60) = 350$ m  
 ∴ Cost = Tk.  $(350 \times 2.5) = \text{Tk. } 750$  (Ans.)

**11. Salam used a part of Tk. 1,00,000 to purchase a Television. Of the remaining portion, he invested  $\frac{1}{3}$  of it at 4% simple annual interest and  $\frac{2}{3}$  of it at 6% simple annual interest. If, after a year, the income from two investments totaled Tk. 320, what was the purchase price of the television? (ONE Bank Special Cadre Officer 17)**

**Solution:**

Let, the purchase price of the television be Tk. x

So, remaining amount = Tk.  $(100,000 - x)$

According to the question,

$$\frac{1}{3} \times (1,00,000 - x) \times 4\% + \frac{2}{3} \times (1,00,000 - x) \times 6\% = 320$$

$$\text{Or, } \frac{1}{3} \times (1,00,000 - x) \times \frac{4}{100} + \frac{2}{3} \times (1,00,000 - x) \times \frac{6}{100} = 320$$

$$\text{Or, } 4(1,00,000 - x) + 12(1,00,000 - x) = 320 \times 300 \text{ [Both side multiply by 300]}$$

$$\text{Or, } 4,00,000 - 4x + 12,00,000 - 12x = 96000$$

$$\text{Or, } 16,00,000 - 96,000 = 12x + 4x$$

$$\text{Or, } 15,04,000 = 16x$$

$$\text{Or, } 16x = 15,04,000$$

$$\therefore x = 94,000$$

∴ The purchase price of the television was Tk. 94,000.

**12. Solve the equation:  $\frac{4}{2x+3} + \frac{15}{5x+4} = \frac{35}{7x+6}$  (ONE Bank Special Cadre Officer 17)**

**Solution:**

$$\frac{4}{2x+3} + \frac{15}{5x+4} = \frac{35}{7x+6}$$

$$\text{Or, } \frac{4}{2x+3} + \frac{15}{5x+4} = \frac{14+21}{7x+6}$$

$$\text{Or, } \frac{4}{2x+3} + \frac{15}{5x+4} = \frac{14}{7x+6} + \frac{21}{7x+6}$$

$$\text{Or, } \frac{4}{2x+3} - \frac{14}{7x+6} = \frac{21}{7x+6} - \frac{15}{5x+4}$$

$$\text{Or, } \frac{4(7x+6) - 14(2x+3)}{(7x+6)(2x+3)} = \frac{21(5x+4) - 15(7x+6)}{(7x+6)(5x+4)}$$

$$\text{Or, } \frac{28x+24-28x-42}{(7x+6)(2x+3)} = \frac{105x+84-105x-90}{(7x+6)(5x+4)}$$

$$\text{Or, } \frac{-18}{(2x+3)} = \frac{-6}{(5x+4)} \text{ [Multiply by } (7x+6)]$$

$$\text{Or, } \frac{3}{(2x+3)} = \frac{1}{(5x+4)} \text{ [Divide by } (-6)]$$

$$\text{Or, } 3(5x+4) = 2x+3$$

$$\text{Or, } 15x+12 = 2x+3$$

$$\text{Or, } 15x-2x = 3-12$$

$$\text{Or, } 13x = -9$$

$$\therefore x = \frac{-9}{13} \text{ (Solved)}$$

ব্যখ্যা: ২য় লাইন ভাগানোর পদ্ধতি হলো -

ডান পাশের হরের x এর সহগের (7) সাথে বাম পাশের ১ম লব (4) গুণ করে (7×4), গুণফলকে (28) ১ম পদের হরের x এর সহগের (2) দ্বারা ভাগ করলে ফলাফল (14) পাওয়া যাবে।

২য় পদকে নিয়ে উপরের প্রক্রিয়া পুনরাবৃত্তি করলে ২য় অংশ (21) পাওয়া যাবে।

উল্লেখ্য যেহেতু ১ম পদ থেকে ১৪ লব বিশিষ্ট পদ পাওয়া গিয়েছে তাই ৪র্থ লাইনে ১৪ লব বিশিষ্ট পদটি ১ম পদের সাথে এবং ২১ লব বিশিষ্ট পদটি ২য় পদের সাথে রেখে লসাগু করতে হবে।

**13. A man has to go 10 km to catch a bus. He walks part of the way at 7 km per hour and runs rest of the way at 12 km per hour. If he takes 1 hour and 15 minutes to complete his journey, find how far he walked? (ONE Bank Special Cadre Officer 17)**

**Solution:**

Let, he walks x km and run  $(10 - x)$  km

$$1 \text{ hr } 15 \text{ mins} = 1 + \frac{15}{60} \text{ hr} = 1.25 \text{ hr.}$$

According to the question

$$\frac{x}{7} + \frac{10-x}{12} = 1.25$$

$$\text{Or, } \frac{12x+7(10-x)}{84} = 1.25$$

$$\text{Or, } 12x+70-7x = 1.25 \times 84$$

Or,  $70 + 5x = 105$   
 Or,  $5x = 105 - 70$   
 Or,  $5x = 35$   
 $\therefore x = 7$  km  
 $\therefore$  He walked 7km. (Ans.)

**14. If 12 candies are sold for Tk. 10 then there is a loss of  $x\%$ . If 12 candies are sold for Tk. 12 then there is a profit of  $x\%$ . What is the value of  $x$ ? (South East Bank PO-17)**

**Solution:**

Let, cost price be Tk. 100.

$\therefore$  At  $x\%$  loss, selling price = Tk.  $(100-x)$

If selling price Tk.  $(100-x)$  then cost price Tk. 100

If selling price Tk. 10 then cost price Tk.  $\frac{100 \times 10}{100-x}$

Similarly, at  $x\%$  profit

Selling price = Tk.  $(100+x)$

If selling price Tk.  $(100+x)$  then cost price Tk. 100

If selling price Tk. 12 then cost price Tk.  $\frac{100 \times 12}{100+x}$

According to the question,

$$\frac{100 \times 10}{100-x} = \frac{100 \times 12}{100+x}$$

Or,  $\frac{5}{100-x} = \frac{6}{100+x}$  [Both side divide by 200]

Or,  $5(100+x) = 6(100-x)$

Or,  $500+5x = 600-6x$

Or,  $5x+6x = 600-500$

Or,  $11x = 100$

$\therefore x = 9.09$

$\therefore$  The value of  $x = 9.09$  (Ans.)

**15. A man deposit in a bank Tk. 5000 at an interest rate of 5% annually every six months. He withdraws Tk. 500 with interest incurred in every six months. What amount he can expect to receive as interest? (South East Bank PO-17, BKB SO 17)**

**Solution:**

Since semiannual, so Interest rate =  $(5/2)\% = 2.5\%$

Total Interest = Tk.  $(2.5\% \text{ of } 5000 + 2.5\% \text{ of } 4500 + 2.5\% \text{ of } 4000 + 2.5\% \text{ of } 3500 + 2.5\% \text{ of } 3000 + 2.5\% \text{ of } 2500 + 2.5\% \text{ of } 2000 + 2.5\% \text{ of } 1500 + 2.5\% \text{ of } 1000 + 2.5\% \text{ of } 500)$

= Tk.  $(2.5\% \text{ of } 27500)$

= Tk. 687.5

**Ans:** Tk. 687.5

**16. 20 workers can finish a work in 30 days. After how many days should 5 workers leave the job so the work is completed in 35 days? (BKB SO 17)**

**Solution:**

20 men can do in 30 days

1 man can do  $30 \times 20 = 600$  days

Let, 5 men left after  $x$  days

20 men can do in  $x$  days

1 man can do in  $20x$  days

Again,

$20 - 5 = 15$  men can do in  $(35-x)$  days

1 man can do in  $15(35-x)$  days

According to the question,

$$20x + 15(35-x) = 600$$

Or,  $20x + 525 - 15x = 600$

Or,  $5x = 600 - 525$

Or,  $5x = 75$

$\therefore x = 15$

Ans: 15 days

**17. A man interest and wages from his investment Tk. 5000. If he invests double then the wages increased 50% and total amount is Tk. 8000. What is his actual income in terms of wages and interest? (BKB SO 17)**

**Solution:**

Let, interest be Tk. X and wages be Tk. Y

According to the question,

$$X + Y = 5000 \dots(i)$$

$$2X + 1.5 Y = 8000 \dots(ii) \quad [150\% \text{ of } Y = 1.5Y]$$

Now,  $2 \times (i) - (ii) \Rightarrow$

$$2Y - 1.5Y = 10,000 - 8000$$

$$\text{Or, } 0.5 Y = 2000$$

$$\therefore Y = 4000$$

From equation (i)

$$X + 4000 = 5000$$

$$\therefore X = 1000$$

**Ans:** Interest = Tk. 1000 and wages = Tk. 4000.

**18. Mr. Sahil goes to his office at a certain time. If his waking speed is 5kmh then he is 7 minutes late. When his speed is 6kmh he reaches 5minutes before. How far his office from his house? (BKB SO 17)**

**Solution:**

Let, total distance be X km

According to the question,

$$\frac{x}{5} - \frac{7}{60} = \frac{x}{6} + \frac{5}{60} \quad [\text{Time} = \text{distance}/\text{Speed}]$$

$$\text{Or, } \frac{x}{5} - \frac{x}{6} = \frac{5}{60} + \frac{7}{60}$$

$$\text{Or, } \frac{6x - 5x}{30} = \frac{5 + 7}{60}$$

$$\text{Or, } \frac{x}{30} = \frac{12}{60}$$

$$\therefore x = 6 \text{ km}$$

$\therefore$  Total distance = 6 km (Ans.)

**19. In a mixture the ratio of apples, peaches and grapes is 6:5:2. If the total mixture is 39 pounds then what is the difference between apples and grapes? (BKB SO 17)**

**Solution:**

Let, Apple, Peaches and Grapes be 6x, 5x and 2x respectively.

$$\text{Total} = 6x + 5x + 2x = 13x$$

$$\text{Apple} = 39 \times \left(\frac{6x}{13x}\right) = 18$$

$$\text{Grapes} = 39 \times \left(\frac{2x}{13x}\right) = 6$$

$$\text{Difference} = 18 - 6 = 12$$

**Ans:** 12

**20. Mr. X asked to construct a road of 1920 meters in 120 days. He appointed 160 workers and find that in 24 days only 1/8 portion of work has been finished. How much additional number of workers would be needed in order to completing the whole work in time? (UCBL PO 17)**

**Solution:**

Given that, total workers = 160

Remaining days = (120 - 24) days = 96 days

Remaining task =  $(1 - 1/8) = 7/8$  parts of the work.

In 24 days 1/8 task is completed by 160 workers

$$\therefore \text{ " 1 " } 1 \text{ " " " " } \frac{(24 \times 8 \times 160) \text{ "}}$$

$$\therefore \text{ " 96 " } 7/8 \text{ " " " " } \frac{24 \times 8 \times 160 \times 7 \text{ "}}$$

$$= \frac{8 \times 96}{8 \times 96}$$

$$= 280 \text{ workers}$$

$\therefore$  Additional workers need to complete the task =  $280 - 160 = 120$  workers. (**Ans.**)

**21. The simple interest on a sum of money will be Tk. 600 after 10 years. If the principal is trebled after 5 years will be the total interest at the end of the tenth year? (UCBL PO 17)**

**Solution:**

In 10 years interest is Tk. 600

In 5 years interest is Tk.  $(600/2) = \text{Tk. } 300$

We know that interest is directly proportional to time and principal.

As, in last 5 years the principal is treble,

So, interest will be = Tk.  $(300 \times 3) = \text{Tk. } 900$

Total Interest = Interest of first 5 years + Interest of last 5 years

$$= \text{Tk. } (300 + 900) = \text{Tk. } 1200$$

Ans: Tk. 1200

**22. Arif's salary is twice that of Babu's salary. Kabir's salary is 1/3 of Arif's and Malek's salary is 2/3 of that Babu's. Total salary of Kabir and Malek are what proportion of Babu's salary. (Bangladesh Tourism Board AD-17)**

**Solution:**

Let, Babu's salary =  $3x$

So, Arif's salary =  $6x$ ,

Kabir's salary =  $\frac{1}{3} \times 6x = 2x$ ,

Malek's salary =  $\frac{2}{3} \times 3x = 2x$ .

$\therefore$  Required portion = (Kabir + Malek) : Babu  
 $= (2x + 2x) : 3x = 4x : 3x = 4:3$

Ans: 4:3

**Alternative Method:**

Let, Babu's salary =  $x$

So, Arif's salary =  $2x$ ,

Kabir's salary =  $\frac{1}{3} \times 2x = 2x/3$ ,

Malek's salary =  $\frac{2}{3} \times x = 2x/3$ .

$\therefore$  Required portion = (Kabir + Malek) : Babu  
 $= \left(\frac{2x}{3} + \frac{2x}{3}\right) : x = 4x : 3x = 4:3$

Ans: 4:3

**23. A worker was hired for 7 days. The 2nd day he was paid Tk. 10 more each day than what he was paid the previous day of work. The total amount he was paid in the 1st 4 days of work equaled to the total amount he was paid in last 3 days, what is starting pay. (Bangladesh Tourism Board AD-17)**

**Solution:**

Let, Salary of 1st day be Tk.  $x$

So, 2nd day to 7th day salary was  $(x+10)$ ,  $(x+20)$ ,  $(x+30)$ ,  $(x+40)$ ,  $(x+50)$  and  $(x+60)$  respectively.

According to the question,

$$x + x + 10 + x + 20 + x + 30 = x + 40 + x + 50 + x + 60$$

$$\text{Or, } 4x + 60 = 3x + 150$$

$$\text{Or, } 4x - 3x = 150 - 60$$

$$\therefore x = 90$$

$\therefore$  Starting pay was Tk. 90. (Ans.)

**24. A, B and C of them working alone can complete a job in 6, 8, 12 day respectively. If all three of them work together to complete a job and earn Tk. 2340 what will be C's share. (Bangladesh Tourism Board AD-17)**

**Solution:**

In 1 day,

A, B and C alone can do  $1/6$ ,  $1/8$  and  $1/12$  part of the work respectively.

$$A:B:C = \frac{1}{6} : \frac{1}{8} : \frac{1}{12}$$

$$= 4:3:2 \quad [\text{Multiply by 24}]$$

Sum of ratio =  $4 + 3 + 2 = 9$



$\therefore C's \text{ share} = \text{Tk. } (2340 \times \frac{2}{9}) = \text{Tk. } 520$

Ans: Tk. 520.

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